Monitoring mode

Stream MultiScreen 4.X allows monitoring of alerts without visualization using subsystem Stream MultiMonitor in Monitoring mode.

Dynamic visualization is based on assumption, that transport streams, distributed throughout LAN using multicast protocol, are visible to all elements of Stream MultiScreen.

Let's review setup of monitoring using common model of system, shown of Fig. 1.

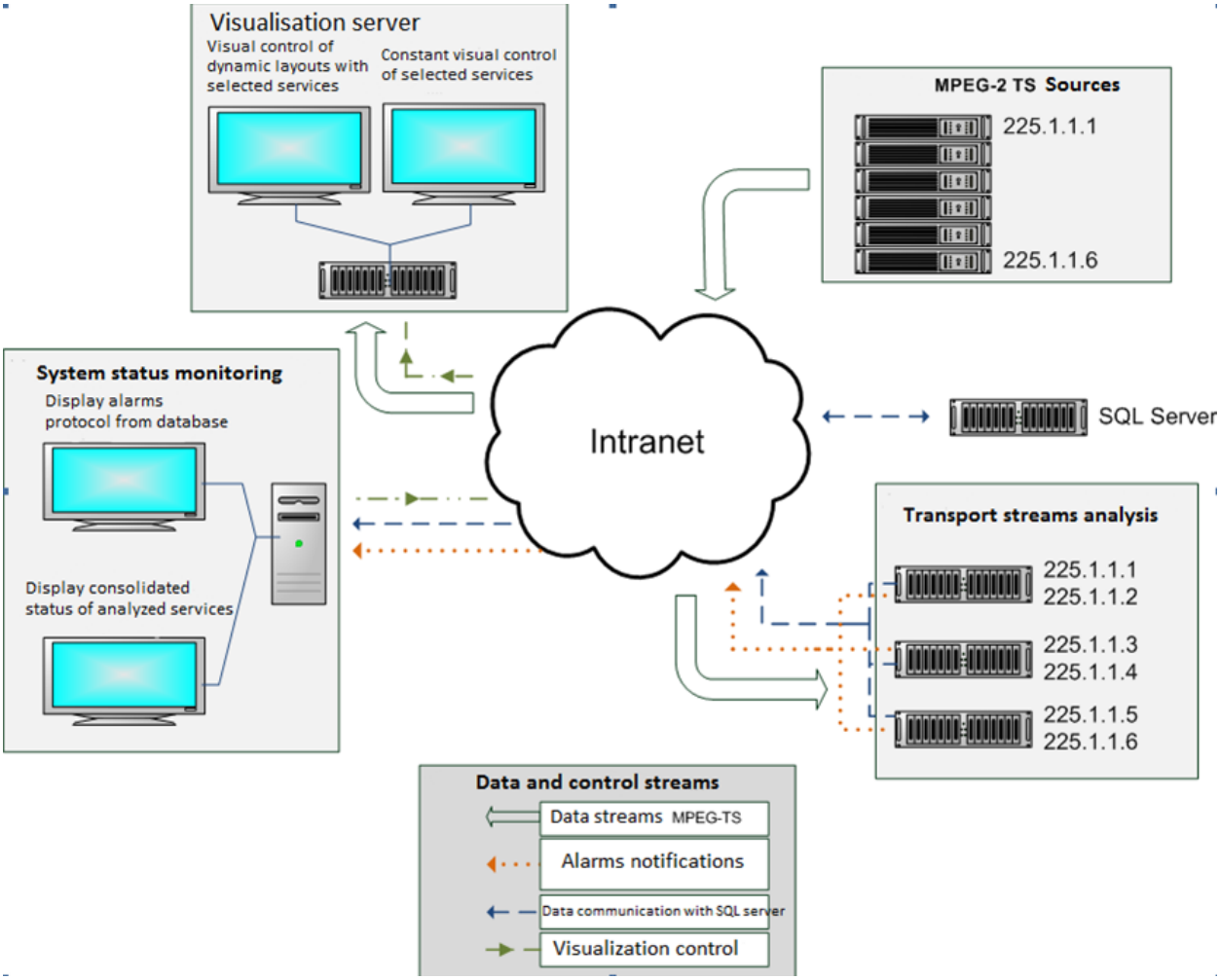

Fig. 1 Example of configuration of monitoring system of Stream MultiScreen 4.X

The system comprises the following components:

- MPEG-2 TS sources receive external transport streams and distribute them throughout LAN among given multicast IP addresses;
- Analysis of transport streams - Stream MultiScreen 4.X servers receive transport streams, analyze them, decode selected services and generate alerts. Alerts are being recorded into database and are being delivered to a monitoring subsystem;
- System state monitoring - Stream MultiMonitor which was previously configured and later launched in «Monitoring» mode. Stream MultiMonitor shows state of selected services using

rectangles, which can change color depending on type of alert, received from Stream MultiScreen 4.X server. Stream MultiMonitor can show state of all services, selected for analysis on Stream MultiScreen servers. MultiMonitor also controls configuration of visualization server;

- Visualization server Stream MultiScreen 4.X is used for visualization of decoded services (video and audio streams) and sound reproduction.

Capabilities of monitoring system

Stream MultiMonitoring, which is part of Stream MultiScreen 4.X, allows centralized complex monitoring of all controlled services of the system.

Main functions of Stream Multi Monitoring are as follows:

- Displays log of events, which could be filtered by date, event type, source of event, etc. Example is shown on Fig. 3;
- Displays configuration of entire system, objects tree, properties of objects. Example is shown on Fig. 3;
- Displays state of all controlled services, using interface «State panel». Example is shown on Fig. 2;
- Centralized visual and audio alarms about alert events. Stream Multi Monitor collects alerts from all Stream MultiScreen 4.X servers and generates alarms;
- Displays history of alerts using frames of corresponding color if event was completed before receipt of notification about new alert;
- Different colors could be assigned to various alerts;
- Control over Stream MultiScreen visualization server. Special buttons, associated with particular service allow sending corresponding service for displaying on visualization server. Audio also could be switched over quickly.

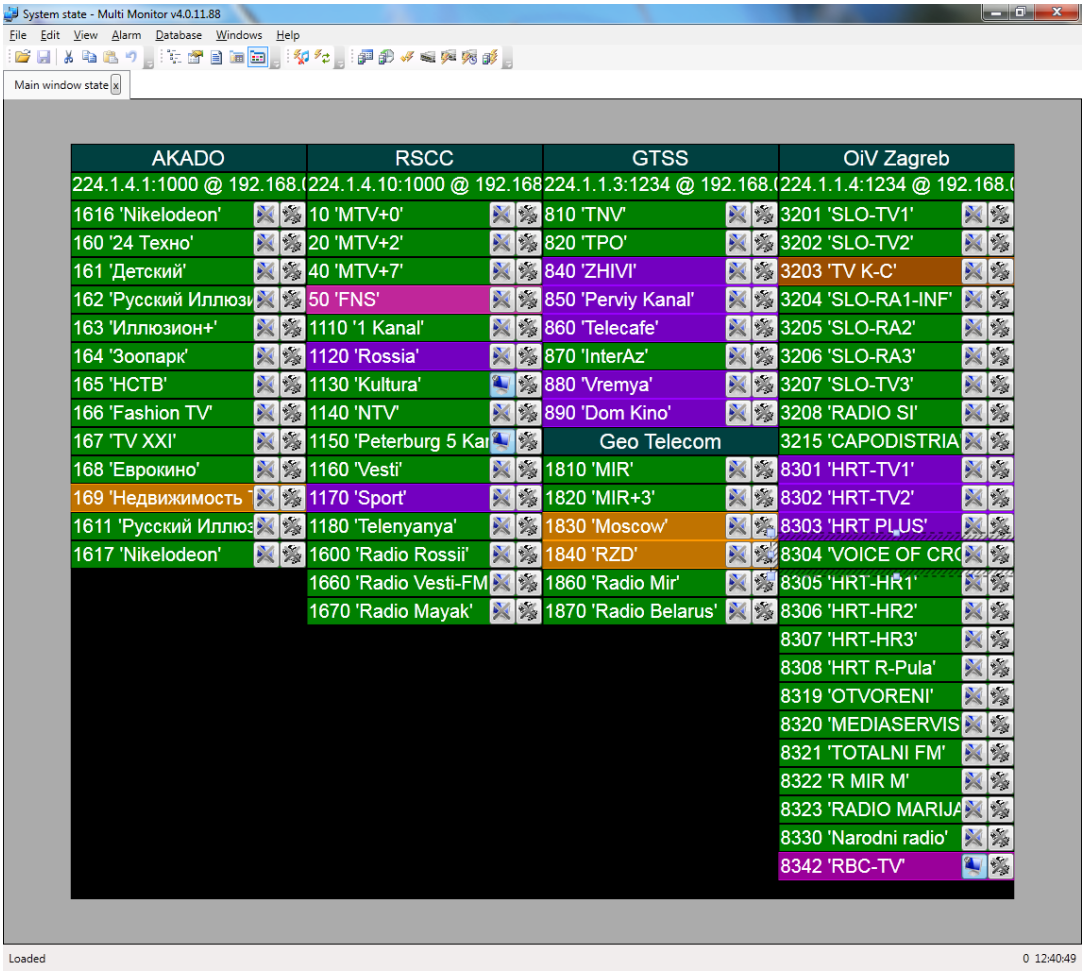

Fig. 2 Monitoring – state panel

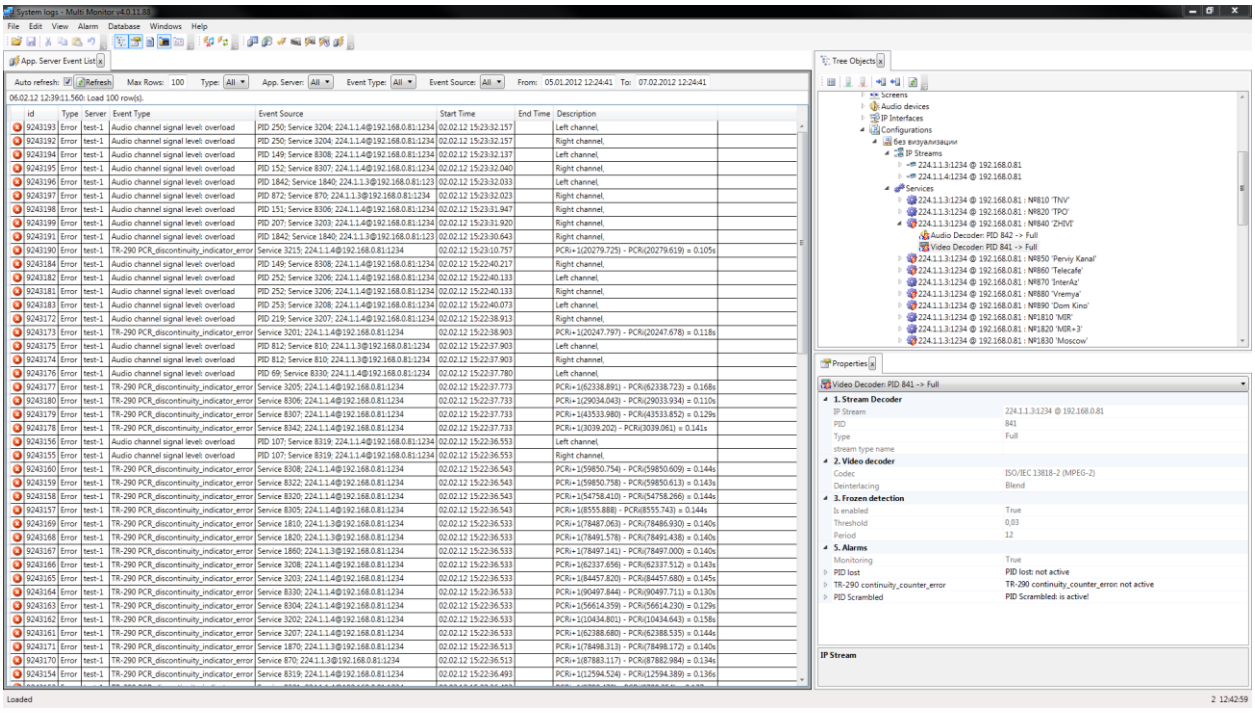

Fig. 3 Monitoring – history log, objects tree and properties

Displaying state of service and visualization control

«Visual alarm control» is green field, which changes color if alert is detected. Example is shown on Fig. 4.

Fig. 4 Displaying of service in state panel

«Visual alarm control» consists of following elements:

- Service ID;
- Service name in accordance to SDT table;
- Toggle button for displaying of this service on visualization server. Once this button is pressed, this service will be added to visualization design/composition and entire composition will be automatically adjusted. All video streams, audio (PPM indicators) and text box with service name will be added. Several services could be visualized concurrently. Number of visualized services is limited to number of licenses for Stream MultiScreen 4.X server. In order to exclude this service the same button has to be pressed again. Example of visualization composition is shown of Fig. 5. This composition corresponds to state panel, shown on Fig. 2;
- Toggle button for audio play. Once this button is pressed, the corresponding service and audio play will be added. If service contains more than one audio track, dialog for selection of track from the list is offered to user. In order to disable audio play, the same button has to be pressed again.

Note: if there is no default values in configuration for state panel, then every time when above mentioned buttons are pressed, the dialog box for selection of parameters will pop up. Setup of parameters is described in chapter «Default parameters for visualization».

Fig. 5 Visualization server - sample

Alert events and Visual alarm control

Visual alarm control changes its color when receives notification that alert event has been detected on Stream MultiScreen 4.X server. Also, upon receipt of new alert Visual alarm control starts blinking. Sound alarm goes off simultaneously.

In order to turn off audio alarm and blinking of Visual alarm control press button «Reset Alarm sound» on a toolbar or use hotkey «Alt+R».

If alert disappeared before interference of operator, green background gets restored and appears border with color, corresponding to alert type. In a meantime, blinking and sound keep going on. The most common scenario is «Frozen» alarm for still frame.

Fig. 6 Displaying of alert history

Alerts have hierarchy of priorities – in case of several concurrent alerts; an alert with higher priority will be displayed. However, blinking of Visual alarm control and sound alarm will turn every time on when new alert comes in.

Note: hierarchy of events is not editable in current version and corresponds the hierarchy of events in category «Alarms» in objects tree. The higher event is located in a list, the higher priority it has.

Configuring of MultiMonitoring

Configuring of system consists of several stages:

1. Creation of schema of entire system as shown on Fig.1;
2. Setup of database server;
3. Setup of system for analysis of transport streams. Every Stream MultiScreen server, dedicated to analysis of transport streams ahs to contain configuration, which covers receivers of transport streams, services and decoders according to schema. Also, parameters of alerts and database connection have to be configured on every server;
4. Setup of visualization server Stream MultiScreen 4.X, which includes:
    a. receivers of ALL monitored transport streams;
    b. services, decoders for elementary streams, visualization design «ScreenView» and media window for visual control;
    c. media window for visual control over services, selected for monitoring;
    d. audio player for selected service;
    e. recording of alerts to database has to be disabled in order to avoid duplication of records for the same services originating from different servers;
    f. Option «Monitoring» in alert settings for visualization server has to be disabled in order to disable alarms.
5. Setup of «Monitoring» mode on Stream MultiMonitor, which includes:
    a. Composition of windows on PC monitors along with displayed objects: alarms panel, system log panel, object's properties panel, service info panel;

b. Creation of visual design consisting of objects displaying state of alerts for selected services;
c. Setup of default visualization parameters.

Note: setup of Stream MultiScreen servers is described in detail in «Stream MultiScreen X User Manual».

Setup of «Monitoring» mode in «Stream MultiMonitor» application

Monitoring windows

Setup of monitoring mode is being facilitated in «Multi monitoring» branch of objects tree as shown on Fig. 7:

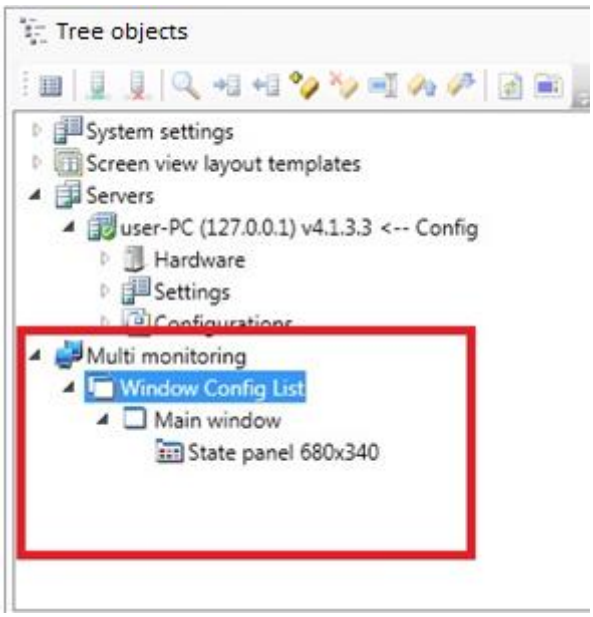

Fig. 7 Setup of «Monitoring» mode in objects tree

«Multi monitoring» category contains list of monitoring windows which will open up when application starts in monitoring mode. Layout and contents of windows could be changes during setup of system.

Monitoring windows are being set up at the first launch of application in accordance to number of connected PC monitors. Windows have to occupy the entire screen and contain all available info tools.

Number of monitoring windows could be changed using «Add» and «Remove» in tool box for objects tree.

Note: main window for monitoring cannot be removed and is always present in setup.

Every monitoring window may contain following panels:

- «Tree objects». It allows viewing current state of entire system, and also switch between compositions on visualization server;
- Table with properties for selected object;
- Output panel which contains setup information for Stream MultiScreen and Stream MultiMonitor applications;

- Log window for reviewing of alarms;
- State panel for selected services which displays composition of alerts.

You can select needed panels using check boxes in «Panels» branch as shown on Fig. 8:

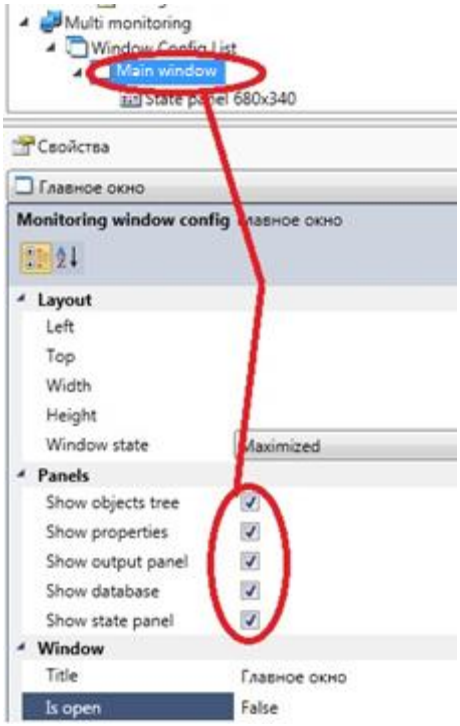

Fig. 1 Panel selection for monitoring window

Also, using «Properties», you may change window name («Window» branch), its location on screen and size («Layout» branch), and location of dividers («Splitter position» branch).

Stream Multi Monitor Designer allows previewing and visual setup of monitoring windows. Right click on chosen window from objects tree and select «Open Monitoring Windows» from context menu. All properties' changes, i.e. size, location, content of panels, executed during preview, will be saved.

Notes: monitoring windows will not open up if state panel is being currently edited.

All settings for monitoring can be reverted if you select «New tree objects» from main menu of Multi Monitor Designer.

State panel

«State panel» could be displayed in monitoring window. This panel allows visual monitoring alerts, originating from services, processed by Stream MultiScreen 4.X server.

In order to configure «State panel» perform following steps:

- Connect to Stream MultiScreen servers (in category Servers), which analyze streams;
- Select needed state panel from objects tree and double click it. Alternatively you may right click it and select «View Designer» from context menu. State panel will open up in work area;
- Left click state panel and press Ctrl+N; or click «New» button in top left corner in order to start wizard;

- Select in wizard needed objects for monitoring as described in chapter «Wizard for state panel», and press «OK»;
- Use default settings as described in chapter «Visualization settings».

Wizard for state panel

Wizard allows quick creating of design. Left click state panel and press Ctrl+N; or click «New» button in top left corner in order to start wizard.

Wizard is shown on Fig. 9. Left panel represents tree of Stream MultiScreen 4.X servers, with which connection has been established. Right panel represents list of objects, included in design. Initially this list is empty. IP streams and services from the tree could be added to the list.

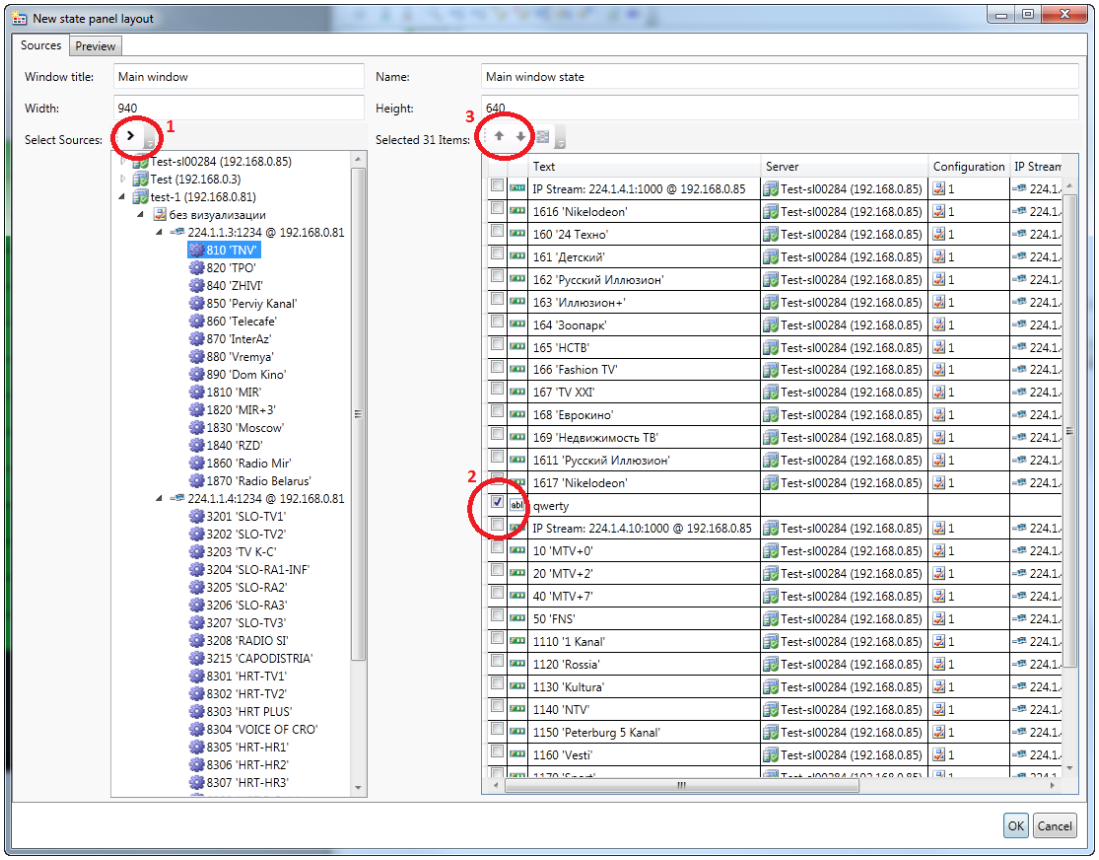

Fig. 9 Wizard for state panel

In order to add object to the list, highlight object and press arrow in a red circle 1. If after selection arrow stays grayed out, it means that selected object is already in a list. In order to remove service from the list, highlight it and press «Delete» on a keyboard.

If you need to change an order of item in a list, checkmark it and use arrows in circle 3 to move it up and down.

Wizard inserts objects in a list from top to bottom and then from left to right. It is trying to distribute objects equally among the columns. In order to change this distribution, checkmark object - this will start next column as shown in circle 2.

«Preview» tab, shown on a Fig.10, allows preview of properties of object, selected from the list. Also, this is an interface, where you may set font properties and text alignment.

Please note that these settings will apply to all objects of the same type, for instance, to all services or IP streams.

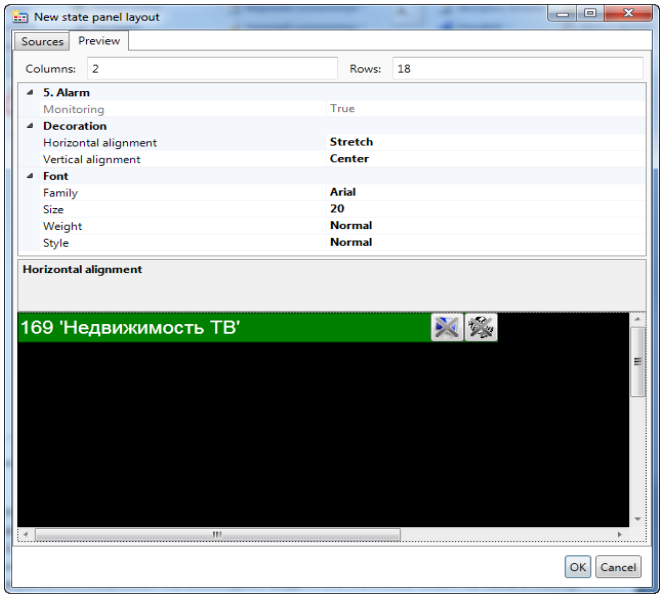

Fig. 10 Preview tab of wizard

Once all needed services are selected, all parameters are set, press «ОК» and state panel will display created composition as shown on Fig. 11. Editor allows adding up objects to composition. In order to do that, select object in «Toolbox» and drag'n'drop into work area.

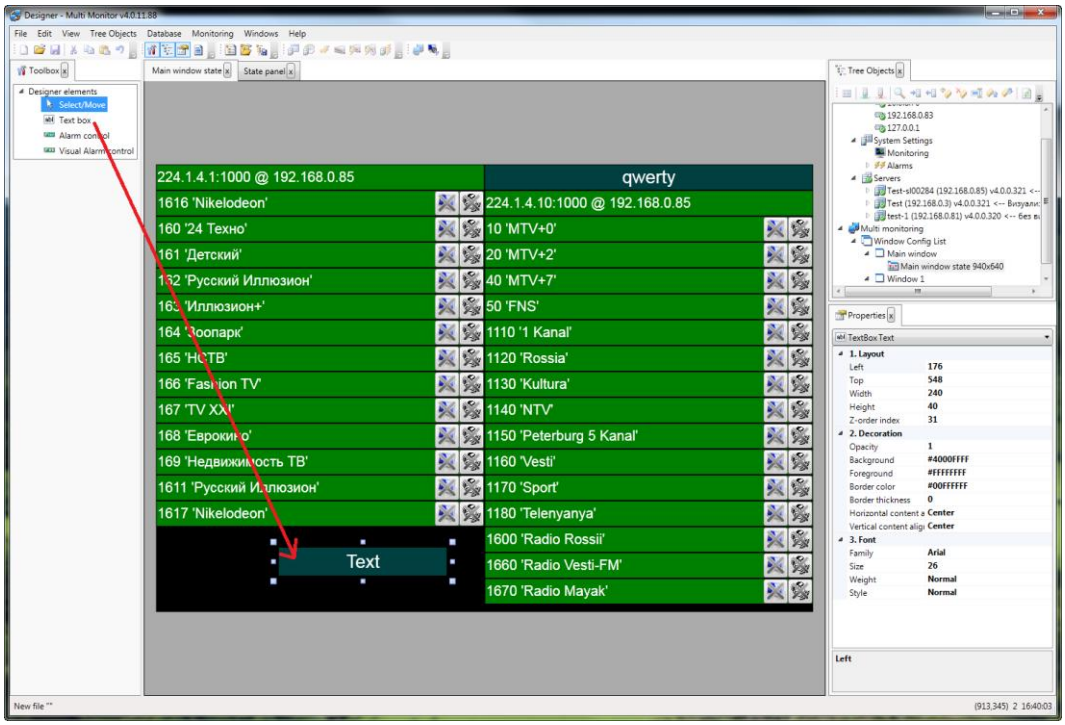

Fig. 11 Editor for state panel in Multi Monitor Designer

Note: in order to rebuild design automatically, press Ctrl+N or «New» button. Wizard will reload current configuration including manually added objects.

Default settings for visualization

For default settings select needed state panel for objects tree, right click and select «Open Visualization Settings Window» from context menu; or press «Open Visualization Settings Window» button in toolbar.

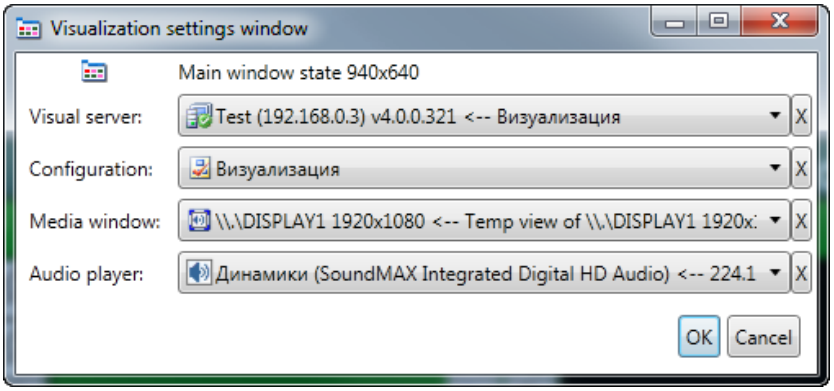

Fig. 12 interface for selection of visualization server

Make selections for Stream MultiScreen 4.X server, configuration, media window and audio player in «Visualization settings window».

Note: Media Window and audio player have to be configured upfront on visualization server.